

## Abstract of the Disclosure

A method is described for modeling interactions between models. A first adaptively sampled distance field having a first spatial hierarchy for a first model is generated, and a second adaptively sampled distance field having a second spatial hierarchy for a second model is generated. During each time step, a potential overlap region is determined using the spatial hierarchies of the first and second adaptively sampled distance fields. When the potential overlap region is non-empty, a third adaptively sampled distance field is generated from the first and second adaptively sampled distance fields using a first interaction procedure and first properties and a fourth adaptively sampled distance field is generated from the first and second adaptively sampled distance fields using a second interaction procedure and second properties to model the interactions between the first and second models.